1. STRUCTURED VERSUS UNSTRUCTURED OBSERVATIONS: TWO EXAMPLES FROM STUDYING CHILDREN'S PLAY

1.1. INTRODUCTION

Observation methods attempt to study individuals without interfering with their behaviour if possible. The focus is upon what can be learnt from individuals in their own habitat acting "normally". In fact, Lofland (1971) described the observation method as "the most penetrating of strategies, the most close and telling mode of gathering information".

Both qualitative and quantitative data can be collected by these methods.

Leary (2001) listed the three decisions for researchers using this method:

i) Will it occur in a natural or contrived setting?
ii) Will the participants know they are being observed?
iii) How will the behaviour be recorded?

Herbert (1990) distinguished five types of observation:

- Unstructured - record as much as possible using no pre-determined format;
- Semi-structured - partly using pre-determined format;
- Structured - fully making use of pre-determined format;

These first three variations are all non-participant.

- Active participant - observer joins in the activities of the group, and their identity as observer is unknown to the group;
- Passive participant - participation in the activities and identity as observer known to the group.

This article concentrates upon structured and unstructured observations. Structured observations can test hypotheses about specific behaviours while unstructured observations tend to describe all the behaviour in the situation (Dyer 1995) (table 1.1).

Play is an ideal behaviour to observe because

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children are acting naturally, and this would be lost if they are placed in a controlled environment of an experiment. They can be observed playing with parents (structured observation example) or with peers (unstructured observation example).

STRUCTURED OBSERVATION	UNSTRUCTURED OBSERVATION
- Concentrates on specific behaviour.	- All behaviour in situation observed.
- Checklist devised before observation begins.	- No checklist used, but any and all data recorded.
- Test hypotheses.	- Describe behaviour.
- Reliability possible to establish.	- Difficult to establish reliability.

Table 1.1 - Comparison of structured and unstructured observations.

1.2. STRUCTURED OBSERVATION

This type of observation makes use of detailed coding frames prepared before the observation. It usually concentrates on specific behaviours and collects quantitative data. It can be "a good deal more complicated, time-consuming and challenging than some other forms of data collection. It can also be a good deal more interesting" (Wilkinson 2000 p238).

Though the categories used in this type of observation are scientific, it is a reductionist method:

> To describe a person as "lifting an arm" may be objective physically but is striped of social meaning compared with "she waved", "he made a bid" or "she threatened the child". Reduction to the simplest units of behaviour (the "molecular" level) can create observations which are numerous, separated and meaningless (Coolican 1990 p65).

Table 1.2 lists the main strengths and weaknesses of this method.

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STRENGTHS	WEAKNESSES
- Quantitative data collected which allow statistical analysis. - Comparison on data possible. - Ease of coding observations.	- Limited use because such narrow focus. - Ignores events other than the observed behaviour. - Depends on clarity of definition of behaviour categories.

Table 1.2 - Strengths and weaknesses of structured observations.

1.2.1. Methodological Issues with Structured Observations

A number of the methodological issues are important here.

1. Coding of Behaviour

There are a number of ways to record the data observed: frequency or the duration and intensity of the behaviour.

The frequency can be recorded by behaviour coding: counting the number of a particular behaviour (table 1.3). While behaviour rating can be used for the duration or intensity of a behaviour. Behaviour rating involves scoring each behaviour on a scale (table 1.4).

TICK CHART FOR BEHAVIOUR OBSERVED
Record every time behaviour seen: 1. Knees trembling 2. Face flushed 3. Swallows 4. Perspires on face 5. Perspires on hands 6. Perspires, other areas

Table 1.3 - Example of behaviour coding system for rating anxiety in children speaking in public.

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SCORE FOR EACH BEHAVIOUR (using 5 point scale)

1	2	3	4	5
no sign	just noticeable	slightly noticeable	quite noticeable	very noticeable

1. Shuffles feet
2. Hand tremors
3. Breathes heavily
4. Voice quivers

Table 1.4 - Example of behaviour rating system for rating anxiety in children speaking in front of an audience.

Table 1.5 compares the two methods of coding for strengths and weaknesses.

FREQUENCY RECORDING/ BEHAVIOUR CODING	DURATION AND INTENSITY RECORDING/ BEHAVIOUR RATING
STRENGTHS - Easy to use. - Can be used for low frequency behaviours. - Measures how much of behaviour present. WEAKNESSES - Each unit of behaviour recorded as same. - Requires behaviour to have clear start and end. - Can be difficult with multiple behaviours.	STRENGTHS - Can show differences between same unit of behaviour. - More sophisticated than frequency. - Can transform into frequency data. WEAKNESSES - Requires behaviour to have clear start and end. - Intensity ratings can have reliability issues. - Demanding on observer.

Table 1.5 - Strengths and weaknesses of frequency, duration and intensity recording in structured observations.

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2. Sampling

A structured or systematic observation must sample the behaviour being observed. Other observation methods may also sample, but it is less important. This can include time, event, or point sampling.

i) Time sampling

The observer does not watch for long periods but sample the time; for example, five minutes in every hour, and what is happening during that time is seen as representative of the whole.

This sampling can be either continuous (every instance of the behaviour in an uninterrupted time) or discontinuous (Gelfand and Hartmann 1984). Discontinuous recording uses repeated sampling periods in different ways:

- Interval sampling - Occurrence or absence of behaviour in observed period. Partial interval time sampling notes the behaviour if it appears for some of the time, and with whole interval time sampling, the behaviour must be present throughout the whole period observed.

- Momentary time sampling - Occurrence or absence of behaviour at a specific moment.

Each technique has strengths and weaknesses (table 1.6).

ii) Event sampling

This records every time the behaviour appears. Whole interval event sampling records the occurrence or not of the behaviour every "x" seconds (whatever the time period being used) (Oldfield 2001).

It tends to study the behaviour from beginning to end (Wilkinson 2000).

iii) Point sampling

This records the behaviour shown by each individual in turn. It is useful for small groups.

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CONTINUOUS TIME SAMPLING	INTERVAL RECORDING	MOMENTARY TIME SAMPLING
STRENGTHS - Can measure frequency and duration of behaviour. - Can show connection and order of behaviours together. WEAKNESSES - Behaviours must have clear start and end. - Can be difficult for observers if multiple behaviours.	STRENGTHS - Useful when start and end of behaviours unclear. - Use for both frequency and duration of behaviour. WEAKNESSES - Can underestimate (whole interval) or overestimate (partial interval) behaviour. - Depends on length of interval used, particularly for whole interval time sampling.	STRENGTHS - Good when start and end of behaviour unclear. - Convenient. WEAKNESSES - Cannot measure "stream" of behaviour. - May miss rare or brief responses.

Table 1.6 - Strengths and weaknesses of different types of sampling.

3. Reliability of Observations

When observing a large amount of data, it is possible to miss a certain amount or selectively concentrate on the more "interested" aspects. This is observer bias, and challenges the reliability of the observation. It is a example of "chance response tendencies" (Dunnette 1996). The behaviour observed is not representative of the behaviour generally. This can also occur in structured and systematic observations with poorly defined behaviour categories.

It can be overcome by the use of multiple observers (to establish inter-observer reliability), practising with the behaviour categories beforehand (pilot study), and video recording the behaviour to be observed.

Dunnette (1996) adds three other sources of error

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for reliability: inadequate samples (due to poor sampling), changes in the participants' behaviour (reactivity because they know they are being watched), and changes in the environment due to the observation. The use of unobtrusive observation can reduce the last two problems.

4. Record-Keeping

When to record the information is more of a problem than it seems. The simple answer is while observing (running or specimen record-keeping), but this is not possible in participant observations or covert observations. Specimen record-keeping is more detailed than running record-keeping. Recording the data later is anecdotal record-keeping. Table 1.7 compares the different means of record-keeping.

Because of these problems the use of video may be better, but it is not perfect (table 1.8). George et al (2006) noted the "especially sensitive topic" of video-recording children today. Though gaining consent to study children is relevant to any observation with or without video cameras.

	ANECDOTAL RECORD-KEEPING	RUNNING RECORD-KEEPING	SPECIMEN RECORD-KEEPING
STRENGTH			
	- Not rushed.	- Observe the behaviour as happens.	
	- Allows for more details.	- Unbiased estimates of frequency and duration of behaviours.	
WEAKNESS			
	- Memory problems.	- Difficult to observe and record a at same time.	
	- Issues about reliability.	- Aided by responses having clear start and end.	

Table 1.7 - Strengths and weaknesses of three methods of record-keeping in observations.

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STRENGTHS	WEAKNESSES
- Ability to replay and pause behaviour, and use slow motion. - Observer can stop when tired. - Analyse or include other behaviours not originally in study.	- Takes long time to analyse. - Effect of presence of equipment on children. - Limits of fixed camera points or problems of moving camera operators.

Table - 1.8 - Strengths and weaknesses of the use of video-recording in structured observations.

Structured Observation Example: Langlois and Downs (1980)

This study involved the observation of the reaction of parents and peers to young children's gender-appropriate and gender-inappropriate play behaviours.

There were two observations. The first study involved observing forty-eight sets of children, their mothers and peers (using a video camera) in a familiar room in the children's nursery. Undergraduates naive to the purpose of the study categorised the behaviour on the videotapes for every five-second interval.

In the second observation, forty-eight children aged 3-5 years old played with their fathers for two 15-minute sessions. In one session, only "masculine" toys (eg "army set with soldiers and war vehicles") were available, and in the other, "feminine" (eg "a large stove with pots, dishes, and utensils"). The father's reaction to the child's play was scored for each ten second interval based around categories of reward and categories of punishment (table 1.9).

Fathers showed more reward behaviours for their children when they played with appropriate-gender toys (eg smile - mean percentage of observed intervals: 6.58 vs 3.38; praise: 3.77 vs 1.94), and more punishment behaviours for gender-inappropriate toys (eg negative talk: 4.54 vs 1.73; verbal ridicule: 2.71 vs 0.04). Overall fathers were more definite in approving appropriate-gender behaviours for boys than peers and mothers, and peers and fathers were disapproving of gender-inappropriate behaviours for boys.

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CATEGORY OF BEHAVIOUR	DEFINITION
REWARD	
- Verbal agreement	- Statements by fathers which acknowledged what child had said, give permission to requests, or concur with child's judgment
- Behavioural approval	- Nod head in agreement or pat the child on the head, back or legs to indicate approval for the child's behaviour
PUNISHMENT	
- Verbal ridicule	- Derogatory, critical, or sarcastic remarks made to child
- Negative talk	- Any negative verbal communication excluding all other forms of verbal punishment

(After Langlois and Downs 1980)

Table 1.9 - Examples of definitions of categories used by Langlois and Downs 1980).

1.3. UNSTRUCTURED OBSERVATION

Used often at the beginning of research projects, the aim is to record as much as possible. This not only includes the specified behaviour, but the context and surroundings of the behaviour.

Data collected with this method tends to be "narrative data" (ie qualitative) rather than statistics (quantitative). Jean Piaget (eg 1951) used this method when observing his own children.

Table 1.10 lists the strengths and weakness of this method.

Unstructured Observation Example: Fein (1984)

This study, using unstructured observation of pretend play sequences, focused upon the whole interaction. Pretend play is where children learn to use an object as something else from 2-3 years old onwards.

The observations of the play with other children were transcribed in order to highlight the sophisticated interaction involved. The whole situation was included and this gains a greater insight than simple categories.

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STRENGTHS	WEAKNESSES
- Whole context of behaviour observed: who, what, when and where (Banister et al 1994). - More ecological validity. - Access to events not possible to study in lab experiments.	- Observer bias (particularly when no clear focus). - Interpretations collected by observer rather than observations introduces subjectivity. - Time-consuming and labour intensive, particularly with transcripts.

Table 1.10 - Main strengths and weaknesses of unstructured observations.

In one example, Peter and Michael (both 3½ years old) are playing a game with a "Dracula Monster" and a "Monster-vanishing Hero" while using toy blocks as laser guns. They showed "a continual shift between talk about their play - who is to be which character and particular suggested sequences of action - and the engagement with and the acting out of the details of the pretence" (Littleton and Miell 2005 p102) (table 1.11).

1. Peter: (Swings hat in air, approaches Michael) You be Dracula; 2. Michael: OK (Gets up, extends arms in front of him) Grrow; 3. P: (Points block at M) Pow; 4. M: (Falls down); 23. P: (Falls down)(Gets up) Now you be Dracula; 24. M: (gets toy from shelf) No, I..pow, pow, pow (Points toy at P); 25. P: You be Dracula; 26. M (Pushes P); 27. P: Be you like you?; 28. M: No, you be Dracula, and you say wow, and I push you down, and I (29) shoot you (Approaches P with block extended in front of him); 30. P: the hell you shoot me. No (Pushes M's arm) You..; 31. M: All right (Lies down).

(After Fein 1984 pp136-137 quoted in Littleon and Miell 2005 p100)

Table 1.11 - Example of transcript of observation from Fein (1984).

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